

5. The Court has personal jurisdiction over Google consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. On information and belief, Google has regularly and systematically transacted business in Texas, directly or through affiliates, subsidiaries, or intermediaries, and/or committed acts of patent infringement in Texas as alleged more particularly below. Google has also placed integrated circuits using TSMC's 28 nanometer and smaller technology¹ and products containing these integrated circuits (the "Accused Products") into the stream of commerce by shipping Accused Products into Texas, shipping Accused Products knowing that those products would be shipped into Texas, and/or shipping Accused Products knowing that these Accused Products would be incorporated into other Accused Products that would be shipped into Texas. Google has an office at 500 W 2nd Street, Austin, Texas 78701 within this district. On information and belief, Google engages in engineering and marketing activities relating to the Accused Products. The Court therefore has both general and specific personal jurisdiction over Google.

6. Venue is proper in this district under 28 U.S.C. § 1400(b) because Google has a regular and established place of business in this district and has committed acts of infringement in this district.

¹ TSMC 28 nanometer and smaller technology includes TSMC's 28 nanometer technology (including TSMC's High-k Metal Gate gate-last technology and high-performance compact technology) ("28 Nanometer"), TSMC's 22 nanometer technology (including TSMC's 22 nanometer ultra-low power, 22 nanometer ultra-low leakage, and 22 nanometer ultra-low leakage static random access memory technologies) ("22 Nanometer"), TSMC's 20 nanometer technology ("20 Nanometer"), TSMC's 16/12 nanometer technology (including TSMC's 16 nanometer Fin Field Effect Transistor ("FinFET") process, 16 nanometer FinFET Plus process, 16 nanometer FinFET Compact Technology, and 12 nanometer FinFET Compact Technology) ("16 Nanometer"), TSMC's 10 nanometer technology (including TSMC's 10 nanometer FinFET process) ("10 Nanometer"), TSMC's 7 nanometer technology (including TSMC's 7 nanometer FinFET process) ("7 Nanometer"). Globalfoundries reserves the right to accuse any forthcoming TSMC technology, such as TSMC's 7 nanometer extreme ultraviolet lithography technology and TSMC's 5 nanometer technology.

FACTUAL BACKGROUND

7. Globalfoundries is a U.S. company with manufacturing facilities that use and develop some of the world's most advanced semiconductor devices available today. Building on IBM's world-class semiconductor technology heritage, Globalfoundries, the acquirer of IBM's semiconductor division, has been accredited as a Category 1A Microelectronics Trusted Source for fabrication, design, and testing of microelectronics by the U.S. Department of Defense (DOD).² Globalfoundries' East Fishkill, New York facility is currently the most advanced Trusted Foundry, and as such is the only facility of its kind that can provide certain advanced circuits to satisfy the DOD's requirements. As the second-largest foundry in the world and the only advanced Trusted Foundry, Globalfoundries is uniquely equipped to efficiently and quickly meet the DOD's advanced and highly classified manufacturing and production needs—and is also equipped to do the same for its private-sector clients.

8. Globalfoundries is the most advanced pure-play foundry in the U.S. and Europe, and employs thousands of people in the U.S. and worldwide. While other companies were abandoning semiconductor manufacturing in the U.S., Globalfoundries bucked this trend by investing billions of dollars on advanced technology and research in the United States. Globalfoundries originated from another leading U.S. semiconductor company, Advanced Micro Devices' semiconductor manufacturing arm in 2009 and expanded globally through acquisition and organic investment. Its largest expenditure by far is its \$15 billion organic U.S. investment in its leading-edge, 300 acre facility known as Fab 8 in Malta, New York. Globalfoundries broke ground for that state of the art facility in 2009 and produces leading edge technology from that

² "Aerospace and Defense," <https://www.globalfoundries.com/market-solutions/aerospace-and-defense>.

location to customers worldwide. A major U.S. acquisition took place in 2015 when Globalfoundries acquired IBM's microelectronics facilities and personnel in Burlington, Vermont and East Fishkill, New York—facilities that became Fab 9 and Fab 10, respectively. Globalfoundries acquired not just IBM's facilities and personnel, but also the fruits of IBM's decades of industry-leading investment in U.S. semiconductor fabrication capacity and technology. Specifically, Globalfoundries obtained 16,000 IBM patents and applications (including the '497 and '966 patents asserted in this action); numerous world-class technologists; decades of experience and expertise in semiconductor development, device expertise, design, and manufacturing; and an expanded manufacturing footprint. The acquisition cemented Globalfoundries' role as a global leader in world-class semiconductor manufacturing and advanced process technologies.³

9. Globalfoundries' U.S. manufacturing facilities in Burlington, Vermont; East Fishkill, New York; and Malta, New York use and develop some of the most advanced process nodes and differentiated technologies (inclusive of its 12/14nm FinFET, RF and Silicon Photonics technology solutions) available today. Fab 8 is a leading fabrication facility for advanced manufacturing in the U.S., with 40,875 square meters of cleanroom space and continued expansion, and over 3,000 total employees as of June 2019. The current capital investment for the Fab 8 campus stands at more than \$15 billion, making Fab 8 the largest public-private sector industrial investment in New York State's history. The significance of this investment and its importance to advanced manufacturing in the U.S. have been recognized by top government

³ "Globalfoundries Completes Acquisition of IBM Microelectronics Business," <https://www.globalfoundries.com/news-events/press-releases/globalfoundries-completes-acquisition-of-ibm-microelectronics-business>.

officials, including by the President of the U.S. during a 2012 visit to New York hosted in part by Globalfoundries.⁴

10. Globalfoundries' investment from the Champlain Valley through the Hudson Valley makes it the spine of the Northeast's Tech Valley. Three out of Globalfoundries' five fabs are in the U.S., but investment does not stop at its manufacturing capacity. Globalfoundries' manufacturing footprint is supported by facilities for research, development, sales, and design enablement located near hubs of semiconductor activity, including in Santa Clara, California; Dallas, Texas; Austin, Texas; Rochester, Minnesota; Endicott, New York; and Raleigh, North Carolina. Of its 16,000 employees worldwide, approximately 7,200 are employed in the U.S.

11. Google is a technology company that, among other things, markets and sells products that incorporate integrated circuits manufactured by Taiwan Semiconductor Manufacturing Company Ltd. ("TSMC"). Unlike Globalfoundries, TSMC has taken a different approach and has decided to simply use Globalfoundries' patented inventions without payment or permission. TSMC is a competing semiconductor foundry with manufacturing facilities located primarily in Hsinchu, Taiwan. TSMC has recently expressed an interest in building a new manufacturing facility in the U.S., but has not reported any tangible steps towards implementing its ostensible interest. In contrast, TSMC completed building the most advanced manufacturing facility of its kind in mainland China last year. By bringing advanced 16nm FinFet to China, TSMC has positioned itself to benefit further from the shift in global supply chains out of the U.S. and Europe into Greater China. TSMC develops, manufactures, imports, and sells for importation into the U.S. semiconductor devices, including to the Defendant. But TSMC does these things on

⁴ "Globalfoundries Welcomes President Barack Obama to NY's Capital Region," <https://blog.globalfoundries.com/globalfoundries-welcomes-president-barack-obama-to-nys-capital-region/>.

the back of Globalfoundries, using Globalfoundries' patented technologies to make its products. Indeed, although its infringing chips have flooded the U.S. market, it appears that TSMC has attempted to avoid being subject to patent infringement allegations in the U.S. through creative legal and tax structuring. As set forth below, the Accused Products incorporate, without any license from Globalfoundries, many technologies developed by Globalfoundries and protected by patents owned by Globalfoundries. TSMC's, and/or its customers', importation of infringing articles into the U.S. from Greater China and elsewhere abroad directly harms Globalfoundries and its billions in U.S. investments in manufacturing. Globalfoundries respectfully seeks relief from this Court for Defendant's infringement.

THE ASSERTED PATENTS

12. The '603 patent is entitled "Semiconductor device with stressed fin sections," and issued on December 16, 2014, to inventors Scott Luning and Frank Scott Johnson. Globalfoundries owns the entire right, title, and interest in and to the '608 patent. A copy of the '608 patent is attached to this Complaint as Exhibit A.

13. The '986 patent is entitled "Methods of forming finfet devices with a shared gate structure," and issued on January 20, 2015 to inventors Andy C. Wei and Dae Geun Yang. Globalfoundries owns the entire right, title, and interest in and to the '986 patent. A copy of the '986 patent is attached to this Complaint as Exhibit B.

CLAIMS FOR PATENT INFRINGEMENT

14. The allegations provided below are exemplary and without prejudice to Globalfoundries' infringement contentions. In providing these allegations, Globalfoundries does not convey or imply any particular claim constructions or the precise scope of the claims.

Globalfoundries' claim construction contentions regarding the meaning and scope of the claim terms will be provided under the Court's scheduling order.

15. As detailed below, each element of at least one claim of each of the Asserted Patents is literally present in the Accused Products, or is literally practiced by the process through which each of the Accused Products is made. To the extent that any element is not literally present or practiced, each such element is present or practiced under the doctrine of equivalents.

**COUNT I
INFRINGEMENT OF THE '603 PATENT**

16. Globalfoundries incorporates by reference the allegations set forth in paragraphs 1 through 15 as though fully set forth herein.

17. On information and belief, Google has infringed and continues to infringe and/or has induced infringement of one or more claims of the '603 patent, including at least claim 15, literally or under the doctrine of equivalents, by importing into the United States, and/or using, and/or selling, and/or offering for sale in the United States, without authority or license, integrated circuits manufactured by TSMC using, for example, TSMC's 16 Nanometer technology and products containing these integrated circuits (collectively, the "'603 Accused Products"), in violation of 35 U.S.C. § 271. The '603 Accused Products include at least Google's Edge TPU development board sold under the Coral Brand, and its edge TPU fabricated using, for example, TSMC's 16 Nanometer process.

18. On information and belief, Google has directly infringed and continues to infringe one or more claims of the '603 patent, including at least claim 15, literally or under the doctrine of equivalents, by importing into the United States, and/or using, and/or selling, and/or offering to sell in the United States, without authority or license, '603 Accused Products, in violation of 35 U.S.C. § 271(a). On information and belief, Google imports '603 Accused Products into the

United States for sales and distribution to customers located in the United States. On information and belief, Google uses the '603 Accused Products through at least testing, evaluations, and development. On information and belief, Google offers for sale and/or sells '603 Accused Products in the United States. For example, Google maintains the coral.withgoogle.com website where it provides links to purchase the '603 Accused Products. This website provides links to resellers, such as Mouser Electronics, Inc., where customers can purchase the '603 Accused Products.

19. The '603 Accused Products meet all the limitations of at least claim 15 of the '603 patent. Specifically, claim 15 of the '603 patent claims a semiconductor device comprising: a semiconductor fin extending along a first direction and having an upper surface interrupted by gaps to form discontinuous upper surface segments, wherein each upper surface segment ends at a respective first end sidewall and a respective second end side wall, and wherein each gap is bounded in the first direction by a selected first end sidewall and an adjacent second end sidewall; and a stress/strain inducing material at least partially filling the gaps and in contact with each second end sidewall and each first end sidewall.

20. The '603 Accused Products are semiconductor devices. Each is an integrated circuit fabricated using, for example, TSMC's 16 Nanometer semiconductor process.

21. The '603 Accused Products have a semiconductor fin extending along a first direction and having an upper surface interrupted by gaps to form discontinuous upper surface segments, wherein each upper surface segment ends at a respective first end sidewall and a respective second end side wall, and wherein each gap is bounded in the first direction by a selected first end sidewall and an adjacent second end sidewall. Each is an integrated circuit fabricated using, for example, TSMC's 16 Nanometer semiconductor process such that the circuit includes

fins extending along a first direction and having an upper surface interrupted by gaps to form discontinuous upper surface segments, wherein each upper surface segment ends at a respective first end sidewall and a respective second end side wall, and wherein each gap is bounded in the first direction by a selected first end sidewall and an adjacent second end sidewall.

22. The '603 Accused Products have a stress/strain inducing material at least partially filling the gaps and in contact with each second end sidewall and each first end sidewall. Each is an integrated circuit fabricated using, for example, TSMC's 16 Nanometer semiconductor process such that, for example, a SiGe epitaxial layer for embedded strain technology at least partially fills the gaps and is in contact with each second end sidewall and each first end sidewall.

23. On information and belief, Google actively, knowingly, and intentionally induces infringement of one or more claims of the '603 patent under 35 U.S.C. § 271(b) by actively encouraging others to import into the United States, and/or make, use, sell, and/or offer to sell in the United States, '603 Accused Products or products containing the infringing semiconductor components of the '603 Accused Products. For example, Google actively promotes the sale, use, and importation of the '603 Accused Products in marketing materials, technical specifications, data sheets, web pages on its website (e.g., coral.withgoogle.com), news and announcements, training tutorials, code examples, development and design tools, and through its sales and distribution channels that encourage infringing uses, sales, offers to sell, and importation of the '603 Accused Products. On information and belief, Google supplies customers with '603 Accused Products so that they may be used, sold, or offered for sale by those customers. For example, Google provides links to sellers of its products, such as Mouser Electronics, Inc., on its website.

24. By at least August 26, 2019, Globalfoundries disclosed, by sending a letter and filing this Complaint, the existence of the '603 patent and identified at least some of Google's and

others' activities that infringe the '603 patent. Thus, based on this disclosure, Google had knowledge of the '603 patent and that its activities infringe the '603 patent since at least August 26, 2019. Based on Globalfoundries' disclosures, Google has also known or should have known since at least August 26, 2019 that its customers, distributors, and other purchasers of the '603 Accused Products are infringing the '603 patent at least because Google has known that it is infringing the '603 patent.

25. Other entities directly infringe the '603 patent by using, offering to sell, and/or selling the '603 Accused Products in the United States and by importing the '603 Accused Products into the United States. For example, Mouser Electronics, Inc. has infringed and continues to infringe one or more claims of the '603 patent, including at least claim 15, literally or under the doctrine of equivalents at least under 35 U.S.C. § 271(a) by importing into the United States, and/or selling, and/or offering for sale in the United States, without any authority or license, at least some '603 Accused Products.

26. Globalfoundries has suffered and continues to suffer damages as a result of Defendant's infringement of the '603 patent.

27. Defendant's continuing acts of infringement are a basis of consumer demand for the '603 Accused Products. Defendant's continuing acts of infringement are therefore irreparably harming and causing damage to Globalfoundries, for which Globalfoundries has no adequate remedy at law, and will continue to suffer such irreparable injury unless Defendant's continuing acts of infringement are enjoined by the Court. The hardships that an injunction would impose are less than those faced by Globalfoundries should an injunction not issue. The public interest would be served by issuance of an injunction.

COUNT II
INFRINGEMENT OF THE '986 PATENT

28. Globalfoundries incorporates by reference the allegations set forth in paragraphs 1 through 27 as though fully set forth herein.

29. On information and belief, Google has infringed and continues to infringe and/or has induced infringement of one or more claims of the '986 patent, including at least claim 1, literally or under the doctrine of equivalents, by importing into the United States, and/or using, and/or selling, and/or offering for sale in the United States, without authority or license, integrated circuits manufactured by TSMC using, for example, TSMC's 16 Nanometer technology and products containing these integrated circuits (collectively, the "'986 Accused Products"), in violation of 35 U.S.C. § 271. The '986 Accused Products include at least Google's Edge TPU development board sold under the Coral Brand, and its edge TPU fabricated using, for example, TSMC's 16 Nanometer process.

30. On information and belief, Google has directly infringed and continues to infringe one or more claims of the '986 patent, including at least claim 1, literally or under the doctrine of equivalents, by importing into the United States, and/or using, and/or selling, and/or offering to sell in the United States, without authority or license, '986 Accused Products, in violation of 35 U.S.C. § 271(g). On information and belief, Google imports '986 Accused Products into the United States for sales and distribution to customers located in the United States. On information and belief, Google uses the '986 Accused Products through at least testing, evaluations, and development. On information and belief, Google offers for sale and/or sells '986 Accused Products in the United States. For example, Google maintains the coral.withgoogle.com website where it provides links to purchase the '986 Accused Products. This website provides links to resellers, such as Mouser Electronics, Inc., where customers can purchase the '986 Accused Products.

31. The '986 Accused Products are manufactured by a process including all of the limitations of at least claim 1 of the '986 patent. Specifically, claim 1 of the '986 patent claims a method, comprising: forming a shared sacrificial gate structure above at least one first fin for a first type of FinFET device and at least one second fin for a second type of FinFET device, said second type being opposite to said first type; and forming a first sidewall spacer around an entire perimeter of said shared sacrificial gate structure in a single deposition process operation and a single etching process operation.

32. The '986 Accused Products are made by a method. Each is an integrated circuit fabricated using, for example, TSMC's 16 Nanometer semiconductor process.

33. During the manufacture of the '986 Accused Products, a shared sacrificial gate structure is formed above at least one first fin for a first type of FinFET device and at least one second fin for a second type of FinFET device, said second type being opposite to said first type. TSMC's manufacture of the '986 Accused Products, in at least some instances, forms a gate above at least one first NMOS fin for an N-type FinFET device and at least one second PMOS fin for a P-type FinFET device, using a gate-last process.

34. During the manufacture of the '986 Accused Products, a first sidewall spacer is formed around an entire perimeter of said shared sacrificial gate structure in a single deposition process operation and a single etching process operation. TSMC's manufacture of the '986 Accused Products, in at least some instances, forms a sidewall spacer around an entire perimeter of said shared sacrificial gate structure, indicating single deposition and etch processes.

35. On information and belief, the '986 Accused Products are neither materially changed by subsequent processes nor become trivial and nonessential components of another product.

36. On information and belief, Google actively, knowingly, and intentionally induces infringement of one or more claims of the '986 patent under 35 U.S.C. § 271(b) by actively encouraging others to import into the United States, and/or use, sell, and/or offer to sell in the United States, '986 Accused Products or products containing the infringing semiconductor components of the '986 Accused Products. For example, Google actively promotes the sale, use, and importation of the '986 Accused Products in marketing materials, technical specifications, data sheets, web pages on its website (e.g., coral.withgoogle.com), news and announcements, training tutorials, code examples, development and design tools, and through its sales and distribution channels that encourage infringing uses, sales, offers to sell, and importation of the '986 Accused Products. On information and belief, Google supplies customers with '986 Accused Products so that they may be used, sold, or offered for sale by those customers. For example, Google provides links to sellers of its products, such as Mouser Electronics, Inc., on its website.

37. By at least August 26, 2019, Globalfoundries disclosed, by sending a letter and filing this Complaint, the existence of the '986 patent and identified at least some of Google's and others' activities that infringe the '986 patent. Thus, based on this disclosure, Google had knowledge of the '986 patent and that its activities infringe the '986 patent since at least August 26, 2019. Based on Globalfoundries' disclosures, Google has also known or should have known since at least August 26, 2019 that its customers, distributors, and other purchasers of the '986 Accused Products are infringing the '986 patent at least because Google has known that it is infringing the '986 patent.

38. Other entities directly infringe the '986 patent by using, offering to sell, and/or selling the '986 Accused Products in the United States and by importing the '986 Accused Products into the United States. For example, Mouser Electronics, Inc. has infringed and continues to

infringe one or more claims of the '986 patent, including at least claim 1, literally or under the doctrine of equivalents at least under 35 U.S.C. § 271(a) by importing into the United States, and/or selling, and/or offering for sale in the United States, without any authority or license, at least some '986 Accused Products.

39. Globalfoundries has suffered and continues to suffer damages as a result of Defendant's infringement of the '986 patent.

40. Defendant's continuing acts of infringement are a basis of consumer demand for the '986 Accused Products. Defendant's continuing acts of infringement are therefore irreparably harming and causing damage to Globalfoundries, for which Globalfoundries has no adequate remedy at law, and will continue to suffer such irreparable injury unless Defendant's continuing acts of infringement are enjoined by the Court. The hardships that an injunction would impose are less than those faced by Globalfoundries should an injunction not issue. The public interest would be served by issuance of an injunction.

JURY DEMAND

41. Plaintiff demands a jury trial as to all issues that are triable by a jury in this action.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully prays for relief as follows:

(a) Judgment that Defendant is liable for infringement and/or inducing the infringement of one or more claims of each of the Asserted Patents;

(b) An Order permanently enjoining Defendant and its respective officers, agents, employees, and those acting in privity or in active concert or participation with it, from further infringement of the Asserted Patents;

(c) Compensatory damages in an amount according to proof, including lost profits, and in any event no less than a reasonable royalty;

- (d) Pre-judgment interest;
- (e) Post-judgment interest;
- (f) Attorneys' fees based on this being an exceptional case pursuant to 35 U.S.C. § 285, including pre-judgment interest on such fees;
- (g) An accounting and/or supplemental damages for all damages occurring after any discovery cutoff and through final judgment;
- (h) Costs and expenses in this action; and
- (i) Any further relief that the Court deems just and proper.

Dated: August 26, 2019

Respectfully submitted,

/s/ Raymond W. Mort, III

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